Lesson 3.6

Practice C
For use with pages 177–184

Solve the system using the linear combination method.

1. \[2x + 3y + z = 10\]
   \[2x - 3y - 3z = 22\]
   \[4x - 2y + 3z = -2\]

2. \[2x - y + 4z = -4\]
   \[3x + 2y + z = -2\]
   \[5x - 2y + 3z = 0\]

3. \[5x - 3y + 2z = 3\]
   \[2x + 4y - z = 7\]
   \[x - 11y + 4z = 3\]

Solve the system using the substitution method.

4. \[3y - y + 2z = 3\]
   \[2x - 3y + 5z = 4\]
   \[2x + y - z = -4\]

5. \[x - 3y + 5z = 3\]
   \[4x + 5y - 2z = 7\]
   \[3x + 2y + 4z = 9\]

6. \[2x + 3y - z = 2\]
   \[x - 5y + 3z = 8\]
   \[5x + y + z = 12\]

Solve the system using any algebraic method.

7. \[2x + 5y - 4z = -7\]
   \[4x + 2y + 3z = 8\]
   \[2x - 8y + 5z = 11\]

8. \[6x + 3y - 9z = 7\]
   \[2x + 2y + 9z = -1\]
   \[5x - y - 6z = 3\]

9. \[2x + 3y + 6z = \frac{7}{2}\]
   \[3x + 4y + 7z = 4\]
   \[5x - 2y - 4z = -\frac{11}{4}\]

10. \[6x - 6y + 2z = -5\]
    \[12x + 3y + 4z = 0\]
    \[4x + 9y + 2z = 6\]

11. \[3x + 3y - 4z = 3\]
    \[x + 2y - 8z = -1\]
    \[6x - 9y - 4z = 12\]

12. \[x + 2y - z = 4\]
    \[3x - y + 4z = -2\]
    \[6x + 5y + z = 10\]

Solve the system of equations.

13. \[w + x + y + z = 1\]
    \[2w + x - y - z = 4\]
    \[w - x - 2y + 2z = 2\]
    \[3w + 2x + y + z = 7\]

14. \[w + 2x - y + 3z = 3\]
    \[w + x + 2y - 2z = 3\]
    \[2w + 2x + 2y - z = 6\]
    \[3w - x - y + 4z = 12\]

Polynomial Curve Fitting In Exercises 15–18, use the following information.

You can use a system of equations to find a polynomial of degree \(n\) whose graph passes through \(n + 1\) points. Consider a polynomial of degree 2,
\[y = ax^2 + bx + c.\] Suppose \((1, 3), (-1, -3),\) and \((2, 12)\) lie on the graph.

Using the point \((1, 3)\), the following equation can be derived:
\[y = ax^2 + bx + c\]
\[3 = a(1)^2 + b(1) + c\]
\[3 = a + b + c.\]

The equation \(a + b + c = 3\) becomes the first equation in the system.

15. Write the equation in the system that corresponds to the point \((-1, -3)\).

16. Write the equation in the system that corresponds to the point \((2, 12)\).

17. Write a system of equations for the coefficients of a polynomial of degree 2 that passes through \((1, 3), (-1, -3),\) and \((2, 12)\). Solve the system.

18. Write the polynomial.